Efficiency of a Business Entity

- Decision making in organizations
  - similar to ISLAND
  - but only within the entity
- Interactions with the environment must also be managed
  - See Porter's 5 forces model.
  - Environment is changing rapidly
- Decisions are made according to our understanding in the form of:
  - A mental model
  - A conceptual model

What is the business of IT people?

To make business operations run efficiently.

To keep a business profitable.

Profit = Revenue (or Value of Outputs) – Cost (or Value of Inputs)

Mostly IT people try to help businesses improve profits by reducing Cost.

In some cases, they also help in increasing revenue.

Cost Reduction and Efficiency

Cost reduction and efficiency go hand in hand.

How to reduce cost?

By improving efficiency

How to improve efficiency?

This is the job of a Systems Analyst

By streamlining business processes
By reducing waste
By introducing automation where possible
By reengineering existing business systems

So how does a Information Systems Architect / Systems Analyst do his job?

- Understand Business Processes.
- Understand the state-of-the-art in Technology.
- Understand how new technology can be applied to existing processes to improve efficiencies.
- Deal with people to help them adopt new technologies and new processes.

For an organization, is Systems Analysis & Design a one-time activity?

- No, Systems are always in need of improvements because of
  - New Technologies
  - New Processes
  - New Regulations
  - New Requirements
  - New inefficiencies
- So, Systems Analysis and Design is a round-the-clock activity.

Is SAD an Art or a Science?

- **SAD is both an art and a science.**
- **The science part can be understood relatively easily.**
- **The art part can take years or decades of experience.**
- **Of course, understanding the science does to some extent helps in understanding the art.**

How is SAD a science?

Systems Theory

Business Entities can be treated as Systems

Can apply the theoretical foundations of “Systems Theory” for analyzing business entities.

Modeling

Can use Modeling techniques used in the sciences.

Conceptual Models of the Real World

- Real world entity:
  - Complex
  - Multi-dimensional
  - Difficult to comprehend
- Model
  - Simple
  - Single-dimensional
  - Comprehensible
- Modeling: the process of simplification and abstraction.

Does model come first?

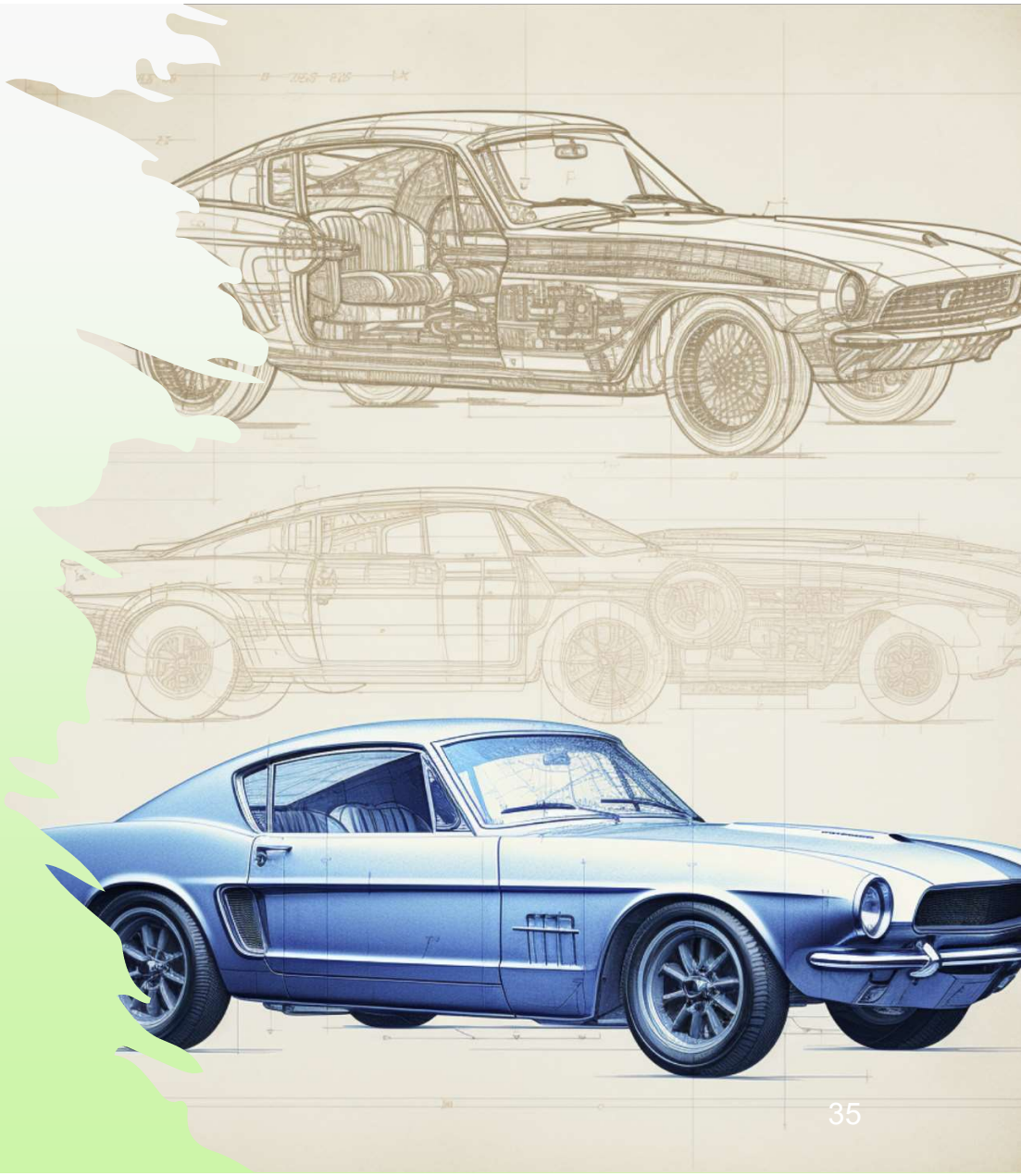
- Does the real-world entity come first?
- Or does the model come first?
- Depends !!

Real World to Model

- Real World precedes models for Natural phenomena like weather, landscape

Model to Real-World

- Models precede real-world entity for manufactured, tangible, physical items like
  - Cars
  - Buildings
  - Roads
  - Bridges.



Issues in Modeling

- Need for modeling.
- Frequency of modeling.
- Whether the model precedes the real world.
- Whether the model influences the real world.

If the real world is too complex, or too abstract, there is a need for modeling

If the real world is dynamic, there is a need for frequent modeling.

If the real world is being designed or projected or predicted.

If you have control over the parameters that shape the real world.

Do business entities need modeling?

- **Businesses are very complex**
- **Businesses are abstract**
- **Businesses are dynamic**
- **Businesses are multi-dimensional**

Therefore Business entities need to be modeled.

Income statements, Balance Sheets, Cash Flow statements, Daily Sales Reports, Payroll Reports, etc. etc. serve as models for a business.

Do they need frequent modeling?

- **Businesses are changing very rapidly.**
- **Just like frequent weather maps there is a need for frequent business maps.**

Need for continuous modeling

- Because of the highly dynamic nature of business,
- Because of the high frequency of decisions to be made,
- Businesses need continuous modeling.
- Every transaction needs to be recorded so that a bunch of transactions can be summarized later.
- Every asset of the business entity needs to be accounted for.
- Systems have to be designed for efficient modeling of business entities.
- Information Systems people design such systems.